

nesses of armour, weight of guns, &c., are given for the navies of the world; numberless diagrams and drawings also appear in illustration of distributions of armour, arrangements of armament, character of structural arrangements, design and position of propelling machinery, &c. Besides these there appear a large number of very beautiful woodcuts of typical ships, from designs by the eminent marine artist, the Chevalier de Martino, who was formerly an officer in the Italian Navy, and possesses a seaman's knowledge of ships in addition to his ability as a painter. These diagrams, drawings, and tables taken alone are of the greatest value, and if published separately in a handy form ought to command a large circulation. Sir Thomas Brassey would add to the debt of gratitude we already owe him if he undertook the issue of such a publication, rivalling the French "Carnet de l'Officier de la Marine," or the Austrian "Almanach für die Kriegs Marine."

The second volume deals with "miscellaneous subjects" of great interest and importance. Amongst these are a fuller discussion of unarmoured ships, of torpedoes and torpedo boats, harbour defence and coast defence ships, the employment of mercantile auxiliaries on war services, and many other topics. Amongst these none exceeds in importance the discussion of the possible employment of our merchant steamships in time of war. The means for securing the aid of these vessels when the necessity arises, and of best equipping them, require the gravest consideration. Already something has been done in this direction by the Admiralty, but much more yet remains to be done, if at the time of need the best of our unrivalled merchant ships are to be available for the defence of the mercantile marine or the many other services on which they might be employed.

The third volume is devoted to a summary of opinions on the shipbuilding policy of the Navy. It is in some respects a curious collection, but will well repay a careful study. The classification by the author of this mass of opinions greatly assists the reader. Unanimity on any point is scarcely to be hoped for, and is not to be found; but the reader will find ample suggestion and food for reflection. The advocates of small ships are fully represented; the designers of the *Italia* and *Lepanto* have their views set forth. Those who believe in armour-protection, and those who think it should be abandoned, obtain an equally fair audience. And in these, as in most other matters, the author gives little or no prominence to his own opinions.

Sir Thomas Brassey has given many proofs of his devotion to the naval interests of this country during his Parliamentary career; but by the publication of this work he has established a claim on the gratitude of all classes of English readers who take an interest in naval affairs.

W. H. WHITE

OUR BOOK SHELF

Camps in the Rockies. By W. A. Baillie-Grohman. Map and Illustrations. (London: Sampson Low and Co., 1882.)

MR. BAILLIE-GROHMAN has already made himself known as an intrepid hunter, a close observer of nature, and a charming raconteur. In the volume before us he shows no falling off in any of these points, and seems quite as

much at home among the parks and peaks of the Rocky Mountains as he is among the chamois-haunted precipices of the Tyrol. The present volume is the result of more than one visit, mainly for sporting purposes, to the Far West, between the Yellowstone Park and Utah. Of the wild life of the ranchers and hunters of the region he has much to tell, and many exciting stories of his own hunting experiences. He adds, moreover, not a little to our knowledge of the topography, geology, and natural history of a region, of many parts of which we yet know little. On the Cañons of the Colorado region he has some interesting notes. We shall be pleased to have another such book from Mr. Grohman.

Physics in Pictures: the Principal Natural Phenomena and Appliances Described and Illustrated by Thirty Coloured Plates for Ocular Instruction in Schools and Families. With Explanatory Text Prepared by Theodore Eckardt, and Translated by A. H. Keane, M.A.I. (London: Stanford, 1882.)

THESE plates are somewhat rough and occasionally violent in colouring, but perfectly trustworthy, and well calculated to interest young people and convey to them a clear idea of the elementary scientific truths intended to be illustrated. The accompanying text gives all the explanation necessary. The plates embrace a wide field of subjects in mechanics, navigation, magnetism and electricity, sound, optics, photography, colours, spectroscopy, &c. We hope the collection will find its way into many schools and families.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to insure the appearance even of communications containing interesting and novel facts.]

Unprecedented Cold in the Riviera—Absence of Sunspots

IN the second week of March Cannes was visited by falls of snow and degrees of cold far exceeding any of which there is previous record. The preceding part of the winter was of average mildness; the minimum thermometer having fallen below freezing only three times, as follows: December 2, 32°; January 24, 29°; January 26, 31·8°. Not once did it fall so low during February; the average minimum being nearly 44°, and the maximum in shade 56°, and was apparently steadily rising with the approach of spring. The following notes are extracted from my diary:—

February 28.—Thermometer, minimum 46°·6, maximum 58°·3; ¹ barometer 29·65. Day fine. Wind W., calm. No spot on the sun.

March 1.—Th. min. 48°·3, max. 58°·3; bar. 29·46. Day fine. Wind N.E., moderate.

March 2.—Th. min. 43°, max. 57°·5; bar. 29·42. Fine, with haze. Wind N.N.E., very strong in p.m.

March 3.—Th. min. 42°·8, max. 55°·3; bar. 29·70. Fine, but strong wind from N.E. Not a spot on the sun.

March 4.—Th. min. 36°, max. 54°·8; bar. 29·70. Wind very strong from N.E. Fine, with cumuli.

March 5.—Th. min. 40°, max. 54°·8; bar. 29·70. Cloudy, nimbostratus. Wind very high from N.E.

March 6.—Th. min. 40°, max. 51°·7; bar. 29·40. Fine, but some clouds. Wind N.E., very high and cold.

March 7.—Th. min. 36°·8, max. 53°; bar. 28·87. Snowed in night in large flakes, and till 10 a.m. to depth of 8 inches. Little wind, N.E. The weight of the snow bowed down shrubs and trees, breaking many. In a large shrubbery in my garden, *Erica arborea*, from 10 to 20 feet high, full of flowers,

¹ Thermometers by Casella. Minimum is placed every night outside an east window of the first floor of my villa, the bulb being protected from radiation. Maximum lies shaded inside the same window, open by day. Barometer, aneroid, by Pillscher.

all prostrated. *Mimosa* of various kinds, also flowering, and the more tender palms, were borne down and broken. Pelargoniums and other succulent shrubs destructively crushed. Partial thaw in the sunshine.

March 8.—Th. min. $27^{\circ}7$, max. $51^{\circ}3$; bar. 28.83. Sunshine in morning began a thaw, but only to discover mischief done by the frost. Wind first from N.E.; in p.m. from S.W., increasing thaw.

March 9.—Th. min. 35° , max. 51° ; bar. 29.67. Rain in night and most of day, but later turned to snow in large flakes. Wind S.E.

March 10.—Th. min. 27° , max. 44° ; bar. 28.88. Fresh snow in night to depth of 4 or 5 inches. Whole country white, including Esterel Mountains, on which snow is hardly ever seen. Wind W., rising, threatening a mistral. Only two small spots on the sun.

March 11.—Th. min. $24^{\circ}1$, max. 45° ; bar. 28.84. Bright morning, but intense cold with mistral, at night destroyed almost all tender plants and shrubs in garden, in spite of covering. One fine young indiarubber-tree of 15 feet, with its rich green and bronze leaves, turned in the night to a spectre of limp black rags. Wind W., calm. Only one small spot on S.E. border of sun.

March 12.—Th. min. $25^{\circ}7$, max. 49° ; bar. 28.90. Sun bright, but hard frost everywhere except in sheltered places. Wind W. strong. Four spots now visible on sun, one larger than the rest, and near it a large oval facula of brighter light.

March 13.—Th. min. $32^{\circ}1$, max. $49^{\circ}6$; bar. 29.30. Weather bright, wind W., moderate. Two of the four spots larger, with deeper umbrae; suspicion of a facula near one.

March 14.—Th. min. 29° , max. $54^{\circ}7$; bar. 29.50. Sky bright, some haze, wind W. Four sunspots, less marked, varying from day to day; one, which was a penumbral streak, now hardly visible.

March 15.—Th. min. 32° , max. $50^{\circ}4$; bar. 29.30. Weather feels much warmer, wind W.S.W.; one of the sunspots much larger, with a rent of dark umbra within.

March 16.—Th. min. $36^{\circ}7$, max. $50^{\circ}3$; bar. 29.19. Weather fine, a little haze, wind W.S.W. Now five spots; two large, with dark irregular centre and fringe of penumbra; two dark, without fringe; one a mere streak of penumbra.

March 17.—Th. min. $41^{\circ}9$, max. $52^{\circ}2$; bar. 29.22. Fine in morning, but hazy; later, clouds from S.W. (showing rain-band) gathered, and brought first hail, then rain for two or three hours; later, the sun appeared with one of the new spots much enlarged, consisting of a penumbra with two distinct dark clefts within.

March 18.—Th. min. $35^{\circ}1$, max. $53^{\circ}9$; bar. 29.48. Bright morning, with haze, wind S.S.W. No change in sunspots.

March 19.—Th. min. $45^{\circ}9$, max. $52^{\circ}5$; bar. 29.20. Morning gloomy, with clouds and rain. The wave of cold seems to have passed, but not so the vast deposits of snow left on the mountains behind, and still less the unknown detriment inflicted on vegetable life in the olive and orange groves around us.

The foregoing observations are too few and too imperfect to warrant any decided conclusions, but they add to those already made in evidence of the connection between the absence of sunspots and the diminution of terrestrial heat; and I trust they may be followed by further and more exact investigations to determine the influence of our great luminary on the weather and climate of the world. How far this "cold wave" has extended to other countries and latitudes I am not informed; but it seems to me that their usually cloudless skies bring the shores of the Riviera into closer and more direct relationship with sun-power than other countries, and therefore render them more sensitive to its variations.

C. J. B. WILLIAMS

Cannes, March 19

Mr. Grant Allen's Article on "The Shapes of Leaves"

THE article by Mr. Grant Allen on "The Shapes of Leaves," published in NATURE (vol. xxvii, p. 439) as first of a series, calls for an emphatic protest on behalf of botanists, and especially of teachers of botany.

In his introductory paragraphs he at once cuts the Gordian knot of vegetable physiology in a most startling manner. He tells us that "from the free carbon thus obtained [*i.e.* by deoxidation of carbonic acid], together with the hydrogen liberated from the water in the soil, the plant manufactures the hydrocarbons which form the mass of its various tissues." If he had

only substituted, by a slip of the pen, the term hydrocarbon for carbohydrate, it might have been regarded as a pardonable piece of negligence; but, since he speaks of "free carbon" and *hydrogen*, he shows that he really meant to write the word "hydrocarbons." Naturally he does not bring forward the results of any experiments which may have led him to make this extraordinary statement.

He goes on to say: "Vegetal life in the true or green plants consists merely in such deoxidation of carbonic acid and water, and arrangement of their atoms in new forms." Among other strange conclusions to be drawn from the above lines we see that, according to Mr. Grant Allen, either nitrogen does not enter into the composition of proteids, or that the latter have nothing to do with that "vegetal life" of which he speaks.

Articles containing blunders of such magnitude, but written with that assurance of style which naturally carries conviction to the mind of the unwary, and disseminated through the country in a widely read journal like NATURE, cannot but produce a rich crop of erroneous impressions. These it will be the arduous duty of teachers to eradicate.

Every one will agree that the popular writer must, before all things, be master at least of the first rudiments of the subject on which he writes: Mr. Grant Allen has in two consecutive sentences shown himself singularly deficient in this respect.

It would be premature here to enter upon a detailed criticism of these articles, since the series is not yet complete. But the two sentences I have quoted are so strangely heterodox that they could not be passed over without remark.

F. O. BOWER

As I do not think it necessary to preface four short papers on the shapes of leaves with a formal treatise on physiological botany, I am not careful to answer Mr. Bower in this matter. The word hydrocarbons was used deliberately, because the important point to notice is this—that the plant consists in the main of relatively deoxidized materials. From the point of view of energy, with which one has to deal mainly in treating of functions of leaves, that fact is of capital importance. I can conscientiously inform Mr. Bower that I was aware of the chemical constitution of proteids, and of the part which they bear in life generally; but I do not see what harm can be done to anybody by such a confessedly rough statement as that which he criticises. If we must always step aside to say all that we know about any subject whenever we have to deal with it, exposition of new matter becomes impossible. May I call Mr. Bower's attention to the further fact that in the same paper I spoke of the plant catching "fragments of carbon," meaning thereby not free carbon, but carbon in the form of carbonic acid, even though it be merely reduced from carbon dioxide to carbon oxide. It seems to me that such roughly accurate language is permissible in popular writing, where one's main object is to insist only on the general principle involved. It is the carbon that the leaf wants, not the oxygen; it is the carbon and the hydrogen that it deals with, not the nitrogen, which is but the instrument for dealing with them; and the two other elements may therefore be safely neglected. Or must we drag in sulphur, and potassium, and calcium, and all the rest as well?

GRANT ALLEN

Ticks

IF W. E. L. will acquaint himself with the somewhat scattered literature of this subject he will find that much useful information has already been placed on record by entomologists and others. The *Farm Journal* for July 10, 1880, contains a sensible and convincing article by Mr. James Elliot, showing the connection between ticks and loup-ill. A good article on the sheep-tick (falsely so called, since it is an insect and not one of the Ixodidae) occurs in *The Field* for April 26, 1873. The scientific aspects of the subject are well treated of by Mégnin, especially in relation to classification in his "Monographie de la Tribu des Sarcopitides Psoriques," 1877. Mr. Hulme's edition of Moquin-Tandon's "Elements of Medical Zoology" has a useful chapter on ticks (p. 302). Some valuable hints are given in Prof. Verrill's Report on parasites to the Connecticut Board of Agriculture, 1870. An excellent article with good figures on *Melophagus ovinus* appeared in one of the volumes of the *Intellectual Observer*. The ticks of the sheep and stag are both figured in Van Beneden's "Animal Parasites" (English edition of International Series, p. 177). The sheep-tick is likewise figured and described in the "Micrographic Dictionary." References and